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Jean-Luis Scugnet Rhodia 8 Cedar Brook Drive CN 7500 Cranbury, NJ 08512-7500				
EXAMINER				
KOLLAS, ALEXANDER C				
ART UNIT		PAPER NUMBER		
4145				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/583,169

Applicant(s)

COUILLENS ET AL.

Examiner

ALEXANDER C. KOLLIAS

Art Unit

4145

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/55/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The oath/declaration recites “I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations. §1.56(a)” when it instead should recite “I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations. §1.56”

Specification

2. The use of the trademarks CS99B FIREBRAKE ZB, DELACAL 450, and ARBURG 320 have been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

3. Claim 21 is objected to because of the following informalities: Claim 21, lines 2, recites “melam” which appears to be a typographical error of “melem” polyphosphate”, since compound

F2 recited in claim 22 is limited by claim 1, wherein the compound F2 is recited as being a reaction product between phosphoric acid and melamine and/or a reaction product between phosphoric acid and a melamine condensation derivative.

Appropriate correction is required.

4. Claim 24 is objected to because of the following informalities: Claim 21, the term "poly(vinyl alcohol)" (Lines 5 and 6) is recited twice.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 15-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is

(a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 15 recites the broad recitation 13% by weight of compounds F1 and F2, and the claim also recites preferably at least 15% (of compounds F1 and F2) which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

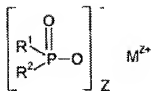
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 15 and 17-18, 20-26, and 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Schlosser et al (US 6,255,371).

Regarding 15, Schlosser et al teaches a composition based on a thermoplastic matrix having a flame-retardant system, comprising at least:

- I. one compound (F1) of formula (I) (Column 1, wherein Formula I is substantially similar to formula F1 of the instant application):



in which:

- a. R1 and R2 are identical or different and represent a linear or branched alkyl chain comprising from 1 to 6 carbon atoms and/or an aryl radical (Column 1, Lines 65-67);
 - b. M represents a calcium, magnesium, aluminum or zinc ion (Column 2, Line 3);
 - c. Z represents 2 or 3 (Column 2, Lines wherein Z=m and m=2 or 3);
- II. one compound (F2) which is a reaction product between phosphoric acid and melamine and/or a reaction product between phosphoric acid and a melamine condensation derivative (Column 2, Lines 48-60)
- III. one compound (F3) which is a melamine condensation derivative (Column 2, Lines 48-49, condensation products such as melam, melem, and melon).

Regarding the amount of compounds F1 and F2 comprising at least 13% by weight, preferably at least 15%, with respect to the total weight of the composition, the reference teaches a composition wherein F1 and F2 comprise 20% by weight (Column 9, Table 2 Polymer PBT GR wherein F1 (DEPAL – aluminum diethylphosphinate, see Column 7, Lines 43-45) comprises 10% by weight and F2 (melamine phosphate) comprises 10% by weight to yield a total of 20% by weight for F1 and F2).

Regarding claim 17, Schlosser et al teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, comprising from 1 to 30% by weight of compound F1 (Column 9, Table 3, Example comprising PBT GR wherein the amount of F1 (DEPAL or aluminum diethylphosphinate) is 10% by weight).

Regarding claim 18, Schlosser et al teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, comprising from 1 to 20% by weight of compound F2 (Column 9, Table 3, Example comprising PBT GR wherein the amount of F2 (melamine polyphosphate) is 10% by weight).

Regarding claim 20, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, wherein the phosphinic acid of the compound F 1 is dimethylphosphinic acid, ethylmethylphosphinic acid, diethylphosphinic acid, or methyl(n-propyl)phosphinic acid (Column 6, Lines 25-31).

Regarding claim 21, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, wherein the compound F2 is melamine polyphosphate, melam polyphosphate, or melem polyphosphate (Column 2, Lines 57-60).

Regarding claim 22, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, wherein the compound F3 is melam, melem,

or melon (Column 2, Lines 50-52).

Regarding claim 23, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, wherein the thermoplastic matrix is (co)polyamide; mono- or diolefin (co)polymer (Column 4, Lines 2-3), polyester (Column 3, Line 14), poly(phenylene ether)s (Column 23, Line 3 34), polycarbonates (Column 3, Line 35), polyureas (Column 5, Lines 65-67), polyimides (Column 5, Lines 65-67), polyether sulfones (Column 6, Line 10), polyacetals (Column 5, Line 40), polysulfones (Column 6, Line 10), poly(phenylene sulfide)s (Column 12, Lines 44-46), polyketones (Column 6, Lines 10-11), polyester carbonates (Column 5, Lines 8-9), polymers comprising halogens (Column 5, Lines 10-11), polyurethanes (Column 5, Lines 42-43), vinyl polymers and their copolymers (Column 5, Lines 33-39), and α,β -unsaturated acid (Column 5, Lines 21-25).

Regarding claim 24, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, wherein the thermoplastic matrix is polypropylene (Column 4, Lines 2-4), polyisobutylene (Column 4, Lines 2-4), polybutylene (Column 4, Lines 2-4), polybutadiene (Column 4, Lines 2-4), polyethylene (Column 4, Line 5-6); polystyrene (Column 4, Lines 44-45), poly(p-methylstyrene) (Column 4, Lines 44-45), poly(α -methylstyrene) (Column 4, Lines 44-45); styrene/butadiene (Column 4, Lines 55-56), styrene/acrylonitrile (Column 4, Lines 63-65), styrene/maleic anhydride (Column 4, Lines 63-65), polychloropropene (Column 5, Line 10), polyacrylate (Column 5, Lines 21-25), polymethacrylate (Column 5, Lines 21-25), polyacrylonitrile (Column 5, Lines 21-25),

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polyacrylamide (Column 5, Lines 21-25), poly(vinyl alcohol) (Column 5, Lines 33-39), poly(vinyl acetate) (Column 5, Lines 33-39), poly(vinyl chloride) (Column 5, Lines 15-20); polyoxymethylene (Column 45, Lines 40-43), poly(phenylene oxide)s (Column 5, Lines 44-46), poly(ethylene terephthalate) (Column 6, Lines 1-8), or poly(butylene terephthalate) (Column 6, Lines 1-8).

Regarding claim 25, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, wherein the (co)polyamide matrix comprises (co)polyamide 6; 4; 11; 12, 4.6; 6.6; 6.9; 6.10; 6.12 (Column 5, Lines 49-51).

Regarding claim 26, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, further comprising reinforcing fillers which are glass fibers (Column 7, Lines 20-22).

Regarding claims 28-29, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, further comprising flame- retardant agents or agents which are synergistic with the flame-retardant system (Column 1, Lines 24-28). Furthermore, the reference teaches a composition, wherein the flame-retardant agents or agents which are synergistic with the flame-retardant system are melamine, or melamine cyanurate (Column 1, Lines 24-28, and Column 9, Table 2, wherein melamine cyanurate content is disclosed).

Regarding claim 30, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches a process for the manufacture of a composition as defined in claim 15, comprising the step of blending the thermoplastic matrix with the flame-retardant system comprising at least the compounds F1, F2 and F3 (Column 7, Lines 5-19 wherein compounding assembly by premixing flame retardant components with thermoplastic polymers is disclosed).

Regarding claim 31, Schlosser teaches all the claim limitations as set forth above. Additionally, the reference teaches an article of manufacture comprising a composition as defined in claim 15 (Column 7, Lines 5-19 wherein compounding assembly and polymer melting is disclosed and Column 7, Lines 28-30 wherein articles such as moldings films, filaments, and fibers are disclosed).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
13. Claims 16, 19 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlosser et al (US 6,255,371) as applied to claim 15 above, and further in view of Hirono et al (US 6,225,383).

Regarding claim 16, Schlosser et al teaches all the claim limitations as set forth above. Additionally, the reference teaches a composition, comprising from 2 to 60 % (Column 3, Lines 19-22 wherein compounds A and B are each independently 1 to 30% by weight) of compounds F1 (Column 1, Formula I), F2 (Column 2, Lines 48-60), and F3 (Column 2, Lines 48-49, condensation products such as melam, melem, and melon). However, the reference does not explicitly disclose a composition comprising from 1 to 50% by weight of the flame-retardant system comprising at least the compounds F1, F2, and F3, with respect to the total weight of the composition.

Hirono et al teaches a flame retardant polyamine resin composition comprising 0.66% to 3.33% by weight of compounds F3 (Column 2, Lines 26-33, wherein the compound melamine

condensation derivative F3 is melem, see Column 4, Formula (3). The percentage of compound F3 is determined based to 100 parts by weight of resin composition and 1 to 50 parts by weight of melem). Furthermore, the reference teaches a composition comprising salts of polyphosphoric acid combined by melam or melem derivatives (Column 2, Lines 25-33).

However, Schlosser et al and Hirono et al do not explicitly teach a flame retardant composition comprising 1-50% by weight of the flame-retardant system comprising at least the compounds F1, F2, and F3, with respect to the total weight of the composition. Since the instant specification is silent to unexpected results, the specific amount of compounds F1, F2, and F3 is not considered to confer patentability to the claims. As flame retardancy is a variable that can be modified, among others, by adjusting the amounts of compounds F1, F2, and F3, the precise amount would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed amount of compounds F1, F2, and F3 cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the amount of compounds F1, F2, and F3 is the fire retardant composition of modified Schlosser to obtain the desired fire retardancy (In re Boesch, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (In re Aller, 105 USPQ 223).

Regarding claim 19, Schlosser teaches all the claim limitations as set forth above. However, the reference does not teach a composition, comprising from 0.1 to 20% by weight of compound F3.

Hirono et al teaches a flame retardant polyamine resin composition comprising 0.66% to 3.33% by weight of compounds F3 (Column 2, Lines 26-33, wherein the compound melamine condensation derivative F3 is melem, see Column 4, Formula (3). The percentage of compound F3 is determined based to 100 parts by weight of resin composition and 1 to 50 parts by weight of melem). Furthermore, the reference teaches a composition comprising salts of polyphosphoric acid combined by melam or melem derivatives (Column 2, Lines 25-33).

Given that both Schlosser et al and Hirono et al are drawn to thermoplastic compositions comprising polyphosphoric salts and melem and melem derivatives, and, given that Schlosser et al does not explicitly prohibit other ingredients, in light of the particular advantages provided by the use and control of the amount of melamine condensation derivatives, it would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness (In re Malagari, 182 USPQ 549).

14. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schlosser et al (US 6,255,371) as applied to claims 15 and 26 above and in view of Hanabusa et al (US 6,433,045).

Regarding claim 27, Schlosser teaches all the claim limitations as set forth above. Additionally, Schlosser teaches that minerals such as chalk may be added to the fire retardant

molding composition (Column 7, Lines 20-23). However, the reference does not teach a composition, wherein the reinforcing fillers are wollastonite, kaolin, clay, silica and mica.

Hanabusa et al teaches a fire retardant composition comprising inorganic fillers are wollastonite, kaolin, clay, silica and mica (Column 5, Lines 40-49). Furthermore, the reference teaches that inorganic fillers can be used either singly or in combination of two or more of them. The fibrous filler, particularly the combination of a glass fiber with a powdery and/or platy filler (such as mica, See Column 5, Lines 48-49), is desirable for obtaining excellent mechanical strength.

Given that both Schlosser et al and Hanabusa et al are drawn to flame retardant thermoplastic compositions comprising phosphoric acid salts (Formula F1 of instant application), melamine compounds, and inorganic fillers and fibers, and, given that Schlosser et al does not explicitly prohibit other ingredients, in light of the particular advantages provided by the use and control of the amount of inorganic fillers as taught by Hanabusa et al, it would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to include such inorganic fillers in the flame retardant thermoplastic composition as taught by Schlosser with a reasonable expectation of success

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER C. KOLLIAS whose telephone number is (571)270-3869. The examiner can normally be reached on Monday-Thursday, 7:30 AM-5:00 PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571)-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gwendolyn Blackwell/
Primary Examiner, Art Unit 1794

/A. C. K./
Examiner, Art Unit 4145